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1801 Pennsylvania Avenue, NW
Washington, DC 20006

August 22, 2000

EX PARTE

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, CC Docket No. 96-98
Deployment of Wireline Services Offering Advanced Telecommunications Capability, CC Docket No. 98-147,
Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations from Ameritech Corporation, Transferor to SBC Communications Inc., Transferee, CC Docket No. 98-141
Application by SBC Communications, Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance for Provision of In-Region InterLATA Services in Texas, CC Docket No. 00-65
Petition of NewPath Holdings, Inc. For an Expedited Declaratory Ruling on the Scope of Unbundled Access to the High-Frequency Portion of Loops, CC Docket No. 00-50
Common Carrier Bureau and Office of Engineering and Technology Announce Public Forum on Competitive Access to Next-Generation Remote Terminals, NSD-L-00-48, DA 00-891

Dear Ms. Salas:

On Monday, August 21, 2000, Rick Whitt, Cristin Flynn, William Drake and I of WorldCom met with Kathy Farroba, Margaret Egler, John Stanley and Jessica Rosenworcel of the Common Carrier Bureau, Jerry Stanshine of the Office of Engineering and Technology, and Andrea Kearney of the Office of General Counsel to discuss line-splitter ownership and placement issues. We distributed the attached document at the meeting.

In accordance with section 1.1206 of the Commission's rules, 47 C.F.R. § 1.1206, an original and one copy of this memorandum are being filed with your office.

Sincerely,

Karen M. Johnson
Associate Counsel, Regulatory Affairs

cc: Kathy Farroba
Margaret Egler
John Stanley
Jessica Rosenworcel
Jerry Stanshine
Andrea Kearney

NRIC V - Focus Group 3
Wireline Network Spectral Integrity **NRIC5FG3/2000-012**
Washington, DC; July 12, 2000

CONTRIBUTION

TITLE: **Optimal Splitter Arrangement**

SOURCE*: **WorldCom, Inc.**

TOPIC: **Line Sharing - Splitters**

DISTRIBUTION: **Focus Group 3 – Spectrum Management Subcommittee**

ABSTRACT

This document explores the primary line sharing splitter configuration options and recommends a splitter arrangement to provide optimal voice and data services to customers. This contribution and its recommendation reflect ILEC-provided voice service and CLEC-provided data service; however, the proposal is not limited to this voice/data provision scenario.

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1. Introduction

The introduction of the capability of line sharing of the ULL has produced the opportunity for increased access competition and consumer service options but, at the same time, has created additional complexity in the provision of those services. As competition increases in the provision of local access voice and data services, the competitive challenges will increase as different customer service scenarios develop. This complexity can be minimized with the proper central office architecture and optimal placement of splitters to provide for competitive Line Sharing deployment.

2. Splitter Placement Options

Three generally recognized splitter arrangements have been suggested and supported by various entities within the industry. These options are:

A. CLEC Owned Splitter in CLEC Cage

B. CLEC Owned Splitter in Common Area

C. ILEC Owned Splitter in ILEC Area

These three options will now be evaluated based on the physical and provisional aspects of each arrangement in an effort to determine which is most viable for insuring reliable access services while maintaining the maximum competitive environment for potential service providers.

2.1 CLEC Owned Splitter in CLEC Cage

2.1.1 Configuration

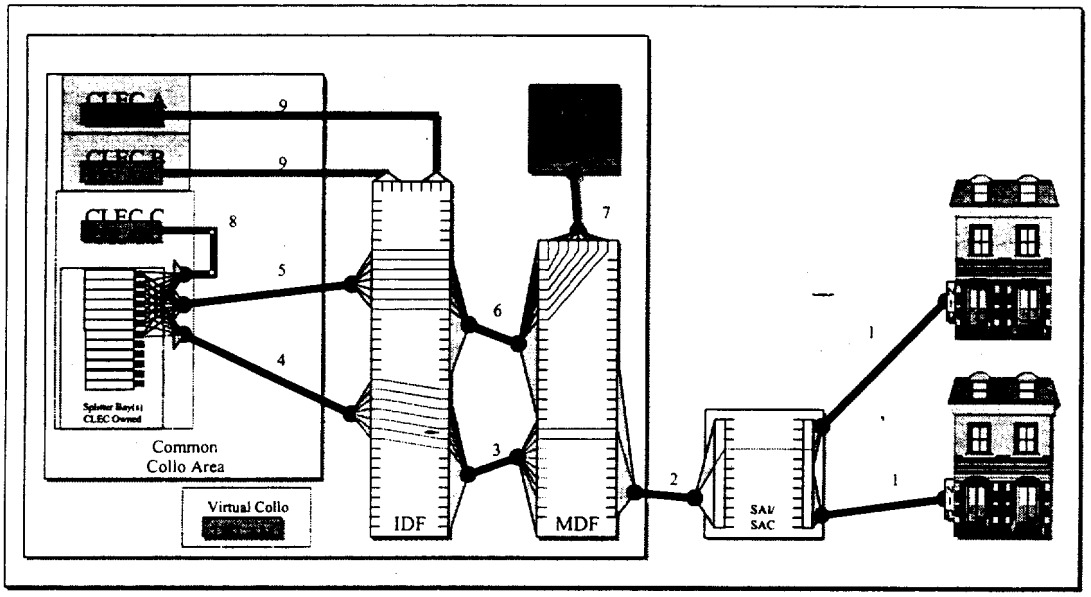


Figure 1. CLEC Owned Splitter In CLEC Cage

- Configuration Details

  1 - Copper loop from customer premise to SAI/SAC carrying voice & data

  2 - Copper loop from SAI/SAC to MDF in Central Office carrying voice and data

  3 - Copper Tie Cable from MDF to IDF carrying voice and data

  4 - Copper Tie Cable from Splitter Bay to IDF carrying voice and data

  5 – Copper Tie Cable from Splitter Bay to IDF carrying voice

  6 – Copper Tie Cable from IDF to MDF carrying voice

  7 - Copper cable from MDF to Class 5 voice switch

  8 - Copper Tie Cable from Splitter Bay to DSLAM carrying data (line shared)

  9 - Copper Tie Cables from IDF to DSLAM located in the Data CLEC Collocation cages (non line shared)

2.1.2 Key Features

- Splitter can be integrated into or separate from DSLAM
- Splitter primarily under D-CLEC control
- Voice and Data from Customer routed into Collo via IDF

- Voice split off and returned to Telco Switch
- Data routed to CLEC Data Network

2.1.3 Issues

- Cost and space constraints and maintenance are main concerns
- Extra space needed in Collo for splitters and cabling to support voice path to switch
- Possible significant increase in intra-office cabling distance via IDF transversal
- CLEC access to voice circuit a concern of ILEC
- No 7x24 access for maintenance (by ILEC)
- Voice & Data path from customer would have to be connected through IDF to facilitate line/terminal transfer adding possible failure point & cabling distance
- Voice path to switch would have to be connected through IDF to facilitate voice transfer adding possible failure point & cabling distance
- IDF exhaustion – introduction of multiple physical connections to combine services

2.2 CLEC Owned Splitter in Common Area

2.2.1 Configuration

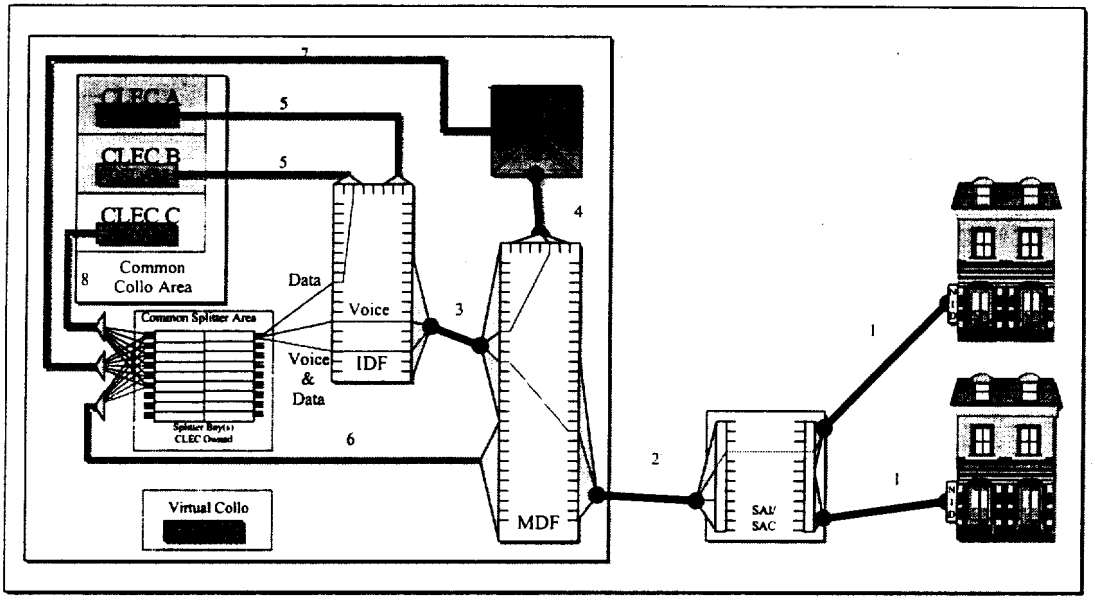


Figure 2. CLEC Owned Splitter In Common Area

- Configuration Details

  1 - Copper loop from customer premise to SAI/SAC carrying voice & data

  2 - Copper loop from SAI/SAC to MDF in Central Office carrying voice and data

3 - Copper Tie Cable from MDF to IDF carrying voice and data and voice only

4 - Copper cable from MDF to Class 5 voice switch

5 - Copper Tie Cables from IDF to DSLAM located in the Data CLEC Collocation cages

6 - Copper Tie Cable from MDF to Splitter Bay carrying voice and data (optional)

7 - Copper Tie Cable from Splitter Bay to Class 5 voice switch (optional)

8 - Copper Tie Cable from Splitter Bay to DSLAM carrying data (optional)

2.2.2 Key Features

- Splitters installed in common area
- CLEC would place 7 foot rack into common area
- CLEC would install splitters shelf at a time
- CLEC would primarily cable splitter to/from IDF to support
  - Voice/Data path to customer
  - Data path to Collo DSLAM for existing DSL cables
  - Voice path to voice switch

2.2.3 Issues

- Extra cabling needed to/from IDF to support arrangement
- Collo, IDF, MDF may not be on same floor causing increase in inter office cable length
- Wasted CO space if CLEC rack is not filled to capacity
- Security: access to all splitters by all CLEC personnel

2.3 ILEC owned splitter in ILEC area (with HDCC)

2.3.1 Configuration

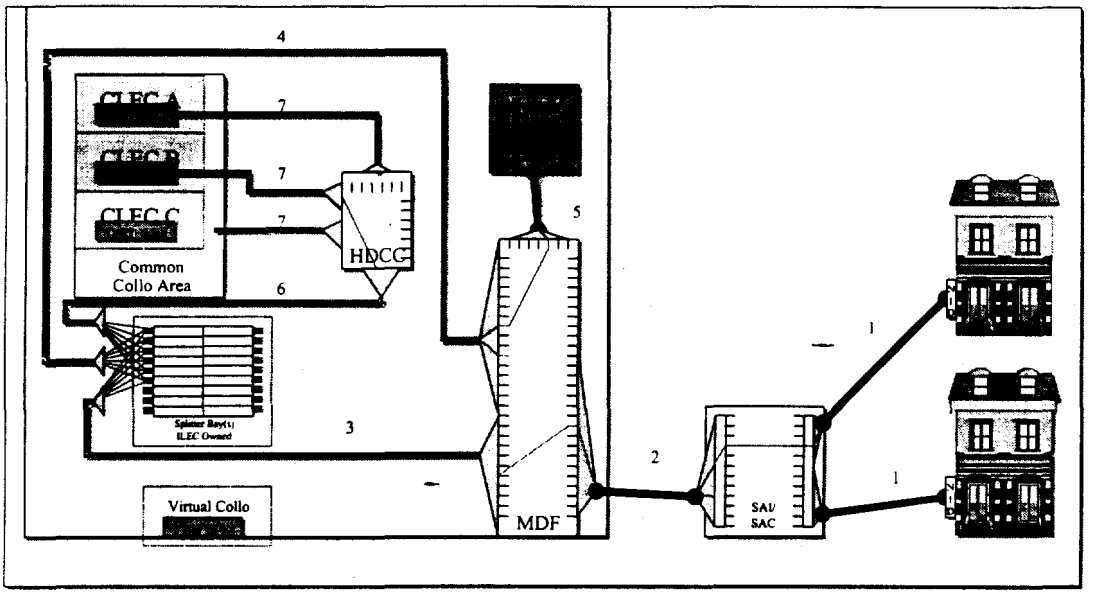


Figure 3. ILEC Owned Splitter In ILEC Area

- Configuration Details

  1 - Copper loop from customer premise to SAI/SAC carrying voice & data

  2 - Copper loop from SAI/SAC to MDF in Central Office carrying voice and data

  3 - Copper Tie Cable from MDF to Splitter Bay carrying voice and data

  4 - Copper Tie Cable from Splitter Bay to MDF carrying voice

  5 - Copper cable from MDF to Class 5 voice switch

  6 - Copper Tie Cable from Splitter Bay to High Density Cross Connect Bay (HDCC)

  7 - Copper Tie Cables from HDCC Bay to DSLAM located in the Data CLEC Collocation cages

2.3.2 Key Features

- Splitter and High Density Cross Connect (HDCC) can be placed close to MDF
- HDCC will support all CLEC data connections
- HDCC will effectively support data service churn (high % data churn expected)
- This architecture will prevent least interference with voice side of line during data churn between CLECs
- Data churn will take one disconnect, one reconnect (CFR) on data side only
  - The rest of the order would be done in provisioning database

- CLEC can cable directly from DSLAM to HDCC
- CLEC can precable to HDCC in 50 or 100 pair increments
- Results in reduction in total cable runs
- ILEC owned splitters supports Virtual Collocations
- Precabling will shorten provisioning process
- Only one CFA needed per order for data churn
- Voice routed directly to voice switch via shortest path
- Data routed directly to DSLAM in CLEC Collo cage
- 7x24 maintenance and repair
- Secure area provided by ILEC with limited access
- Test point provided on splitter for CLEC testing
- Give parity access to splitters same as ILEC owned subsidiary CLEC
- ILEC owned splitters architecture saves valuable central office floor space
    - Service providers should be able to order splitters on a per line/port basis
    - All CLEC splitters in single area filling each frame/rack to capacity instead of having separate frames/racks for each individual CLEC

2.3.3 Issues

- CLEC must provide splitter forecasting to ILEC (inaccuracies subject to penalties)
- Splitter type/order determined by ILEC
- Splitter access (for testing, etc.) more restricted to CLEC

3. Summary

For line sharing, a centralized splitter location along with the use of a high density cross connect (HDCC) provides the most efficient and maintainable arrangement for line shared services. When considering the use of an HDCC, its control and maintenance requirements suggest that a single owner is most feasible. This and the reality of limited central office space and security/reliability issues further suggest that ILEC-owned and controlled splitters provide the best splitter arrangement for line sharing.

Line Sharing: Splitter Ownership and Placement Issues

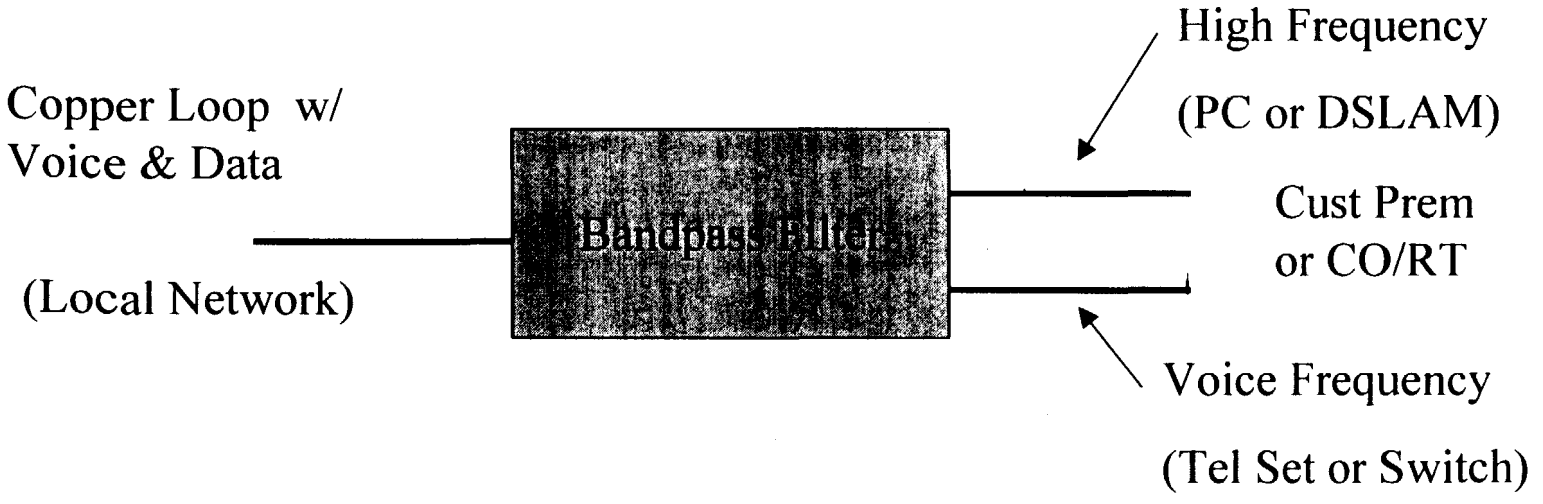
August 21, 2000

What is a splitter?

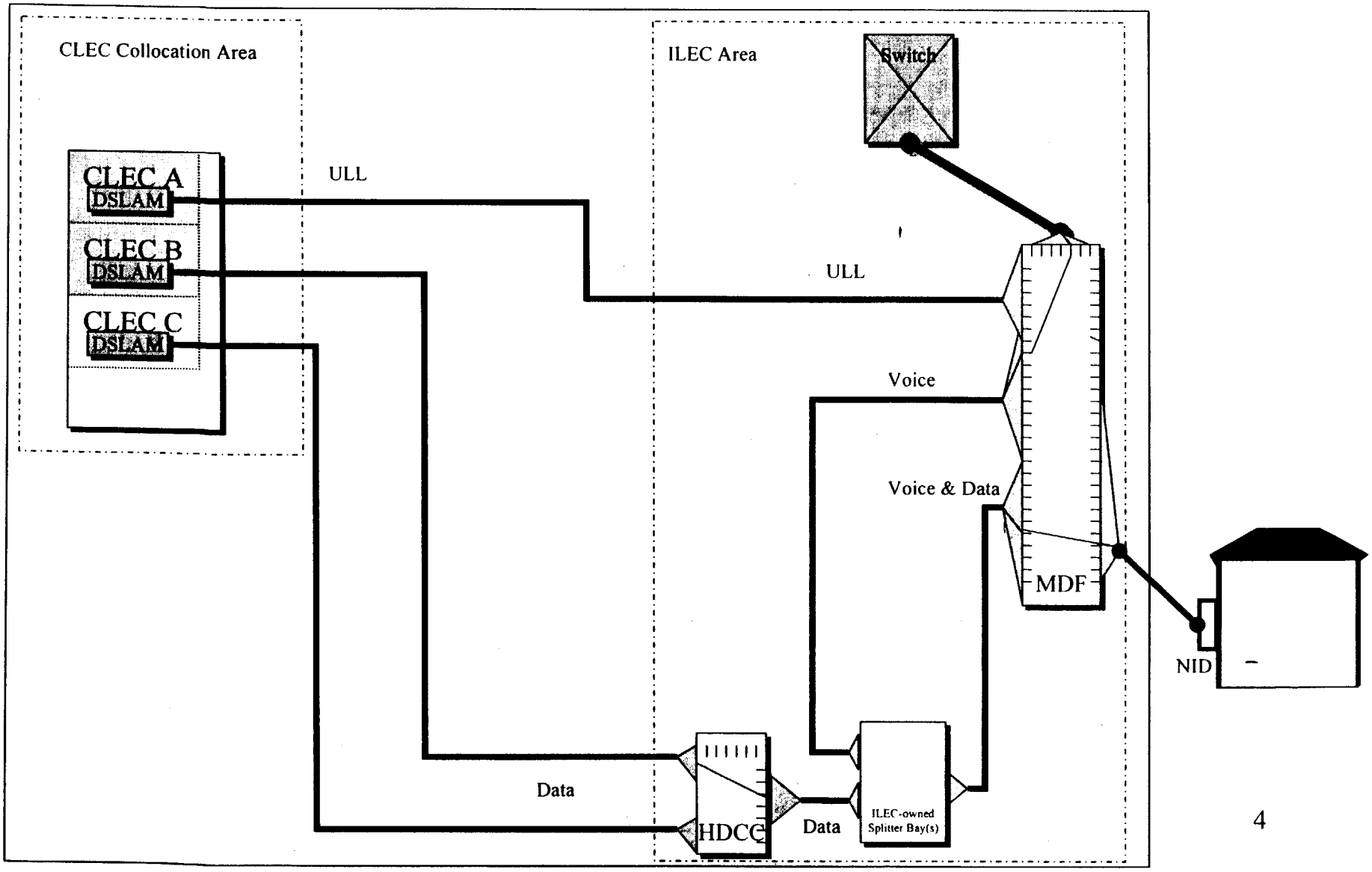
- "A filter that splits or separates signals on the basis of their transmission frequency." Newton's Telecom Dictionary
- The UNE Remand Order is incorrect: it does not route individual data units "based on address or other routing information contained in the packet." UNE Remand Order, at ¶ 304.
- Should be associated with the loop when passband-DSL based service is provided (e.g. ADSL)

What is a Splitter?

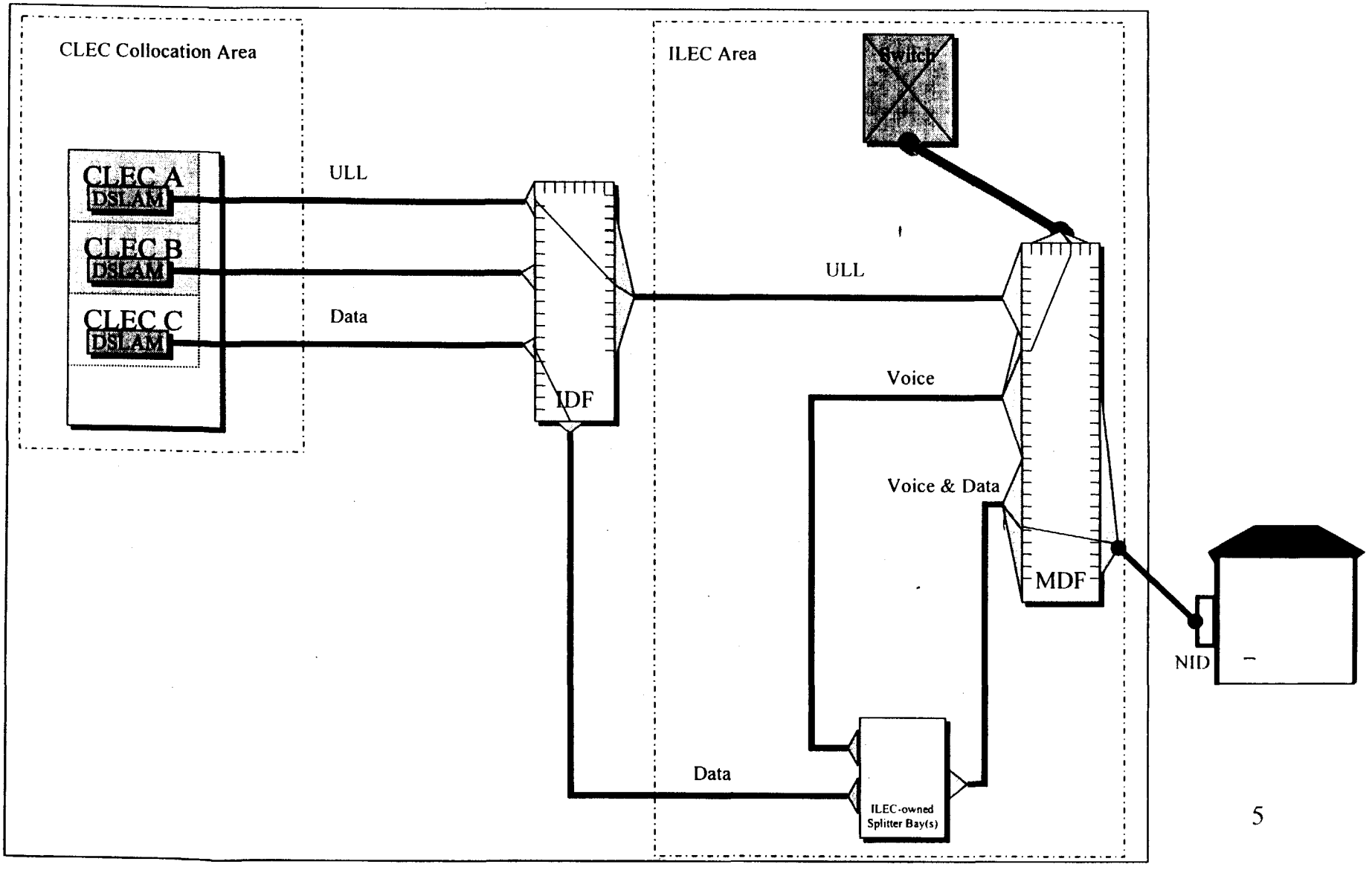
- A passive filter that divides the transmitted signal on a loop into high and low frequency bands



ILEC-Owned Splitter In ILEC Area using HDCC



ILEC-Owned Splitter In ILEC Area using existing IDF & Tie Cables



Key features of ILEC-owned splitters

- Splitter and high density cross connect (HDCC) can be placed close to MDF
- HDCC will support all CLEC data connections
- HDCC will effectively support data service churn (high % data churn expected)
- This architecture will prevent least interference with voice side of line during data churn between CLECs

Key features of ILEC-owned splitters, con't

- Data churn will take one disconnect, one reconnect (CFR) on data side only
  - The rest of the order would be done in provisioning database
- CLEC can cable directly from DSLAM to HDCC
- CLEC can precable to HDCC in 50 or 100 pair increments
- Results in total cable runs

Key features of ILEC-owned splitters, con't

- ILEC owned splitters supports virtual collocations
- Precabling will shorten provisioning process
- Only one CFA needed per order for data churn
- Voice routed directly to voice switch via shortest path
- Data routed directly to DSLAM in CLEC collo cage
- 7x24 maintenance and repair
- Secure area provided by ILEC with limited access

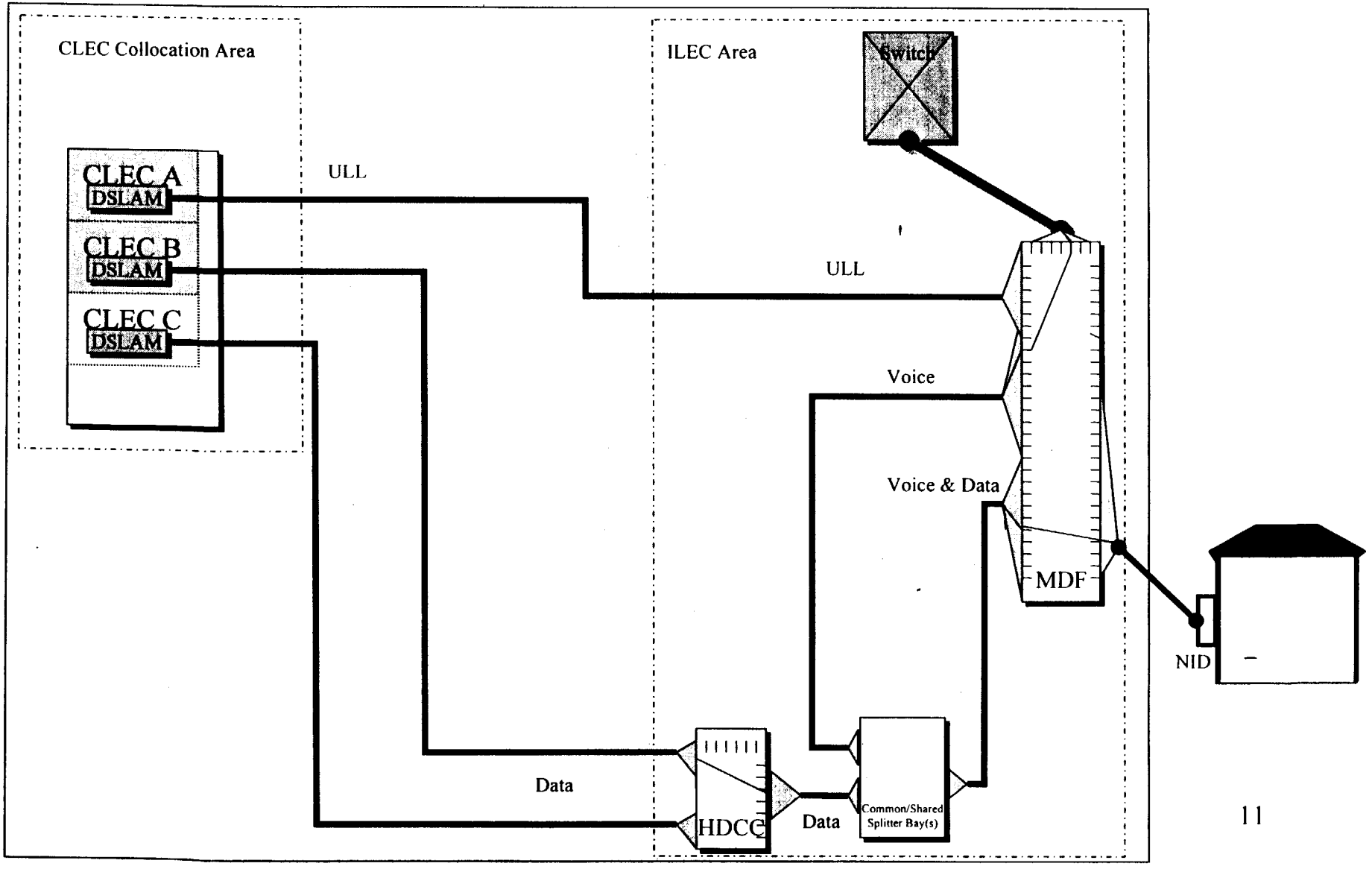
Key features of ILEC-owned splitters, con't

- Test point provided on splitter for CLEC testing
- Give parity access to splitters same as ILEC owned subsidiary CLEC (in this configuration)
- ILEC owned splitter architecture saves valuable central office floor space
  - Service providers should be able to order splitters on a per-line/port basis
  - All CLEC splitters in single area filling each frame/rack to capacity instead of having separate frames/racks for each individual CLEC

Issues with ILEC-owned splitters

- CLEC must provide accurate splitter forecasting to ILEC
- Splitter type/order determined by ILEC
- Splitter access (for testing, etc.) more restricted to CLEC

Shared/Common Splitter In ILEC Area using HDCC



Key features of shared splitter in ILEC owned space

- Splitters installed in common area
- CLEC would place 7 foot rack in common area
- CLEC would install splitters shelf at a time
- CLEC would primarily cable splitter to/from HDCC to support
  - Voice/data path to customer
  - Data path to collo DSLAM for existing DSL cables
  - Voice path to voice switch

Issues of shared splitters in ILEC owned space

- Extra cabling needed to/from HDCC to support arrangement
- Collo, MDF, (and possibly IDF) may not be on same floor, causing increase in inter office cable length
- Wasted CO space if CLEC rack is not filled to capacity
- Security: access to all splitters by all CLEC personnel

Key features of CLEC-owned and collocated splitters

- Splitter can be integrated into or separate from DSLAM
- Splitter primarily under DLEC control
- Voice and data from customer routed into collo via HDCC
- Voice split off and returned to Telco switch
- Data routed to CLEC data network

Issues with CLEC splitter ownership and collocation

- Cost and space constraints and maintenance are main concerns
- Extra space needed in collo for splitters and cabling to support voice path to switch
- Possible significant increase in intra-office cabling distance via IDF transversal
- CLEC access to voice circuit a concern of ILEC
- No 24x7 access for maintenance (by ILEC)

Issues with CLEC splitter ownership and collocation, con't

- Voice and data path from customer may have to be connected through IDF to facilitate line/terminal transfer adding possible failure point and cabling distance
- Voice path to switch may have to be connected through IDF to facilitate voice transfer adding possible failure point and cabling distance
- IDF exhaustion - introduction of multiple physical connections to combine services